

Invasive Alien Species

A Research Effort of the United States Air Force Research Laboratory, AFRL/MLQ
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THE PROBLEM

The Brown Tree Snake (BTS) was introduced to Guam during WW II military operations. Since that time, the BTS has been an ecological disaster to Guam. The BTS has been responsible for the extermination of 9 of 12 native forest bird species in Guam. Two of three native bat species and numerous species of lizards, and small mammals have also disappeared due to the BTS. The BTS has also caused frequent power outages. In some forested areas of Guam, BTS populations number as high as 13,000 snakes per square mile.



The Brown Tree Snake

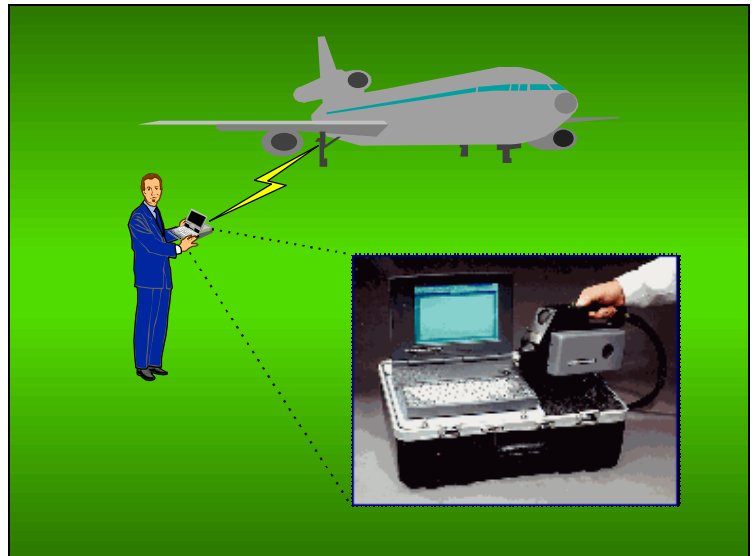
The BTS threatens to become established on other islands or the southern portion of mainland United States. The BTS has been sighted on Saipan, Tinian, Rota, Kwajalein, Wake, Oahu, Pohnpei, Okinawa, Diego Garcia, and in Texas. It is frequently found as a stowaway in cargo or aircraft leaving Guam. The BTS is considered a major threat to Hawaii and other Pacific islands that do not have a native snake population, and, therefore, no natural predators. In two months during the summer of 1997, there were six sightings reported in Hawaii. Wildlife officials regard the BTS as the most imminent alien species threat to Hawaii.

Current control methods consist of snake traps and patrols to keep snakes from transportation hubs in Guam, the establishment of snake-free holding zones for cargo, and source and destination inspection of cargo using dogs for detection. Annual control costs exceed one million dollars.

THE CONCEPT

A reliable, portable, cost-effective device capable of detecting and locating the BTS in and around aircraft, ships, and cargo would greatly enhance the efforts to control the BTS and prevent its spread to other locations. Such a device would have several advantages over using dogs for detection:

- ◇ Greatly reduced operating costs
- ◇ Improved access (e.g., wheelwells, container cargo)
- ◇ Increased availability - continuous operation
- ◇ Reduced training (e.g., technician operable)
- ◇ Complement other means (e.g., dogs, fumigants)



APPROACH

AFRL/MLQ is investigating multiple techniques including chemical sampling badges to accompany cargo and equipment, and chemical emissions detection technologies such as ion mobility spectrometry (IMS) and gas chromatography (GC) with mass spectrometry (MS). Emphasis will be on off-the-shelf or emerging technologies that show promise for portability, and that can be fielded within 30 months.

PHASE I (FY99) (Sponsored by AMC/CEV)

- Identify detectable characteristics of the BTS
- Assess detection technologies
- Test best and most suitable technology

PHASE II

- Instrumentation engineering
- Demonstrate/validate field instrument
- Transition to user (30 months or less)

**FOR MORE
INFORMATION
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